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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,512	04/19/2004	Hun-Jung Yi	8836-242 (IH13145-US)	3483
22150 7590 02/13/2008 F. CHAU & ASSOCIATES, LLC 130 WOODBURY ROAD WOODBURY, NY 11797				
EXAMINER				
WATSON, JOY L				
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1792				
MAIL DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/827,512

Applicant(s)

YI ET AL.

Examiner

Joy Watson

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 8-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CD/CD)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed November 7, 2007 have been fully considered but they are not persuasive.

In response to applicant's argument that '002, '696 and '718 fail to show "a separation plate having an exhaust path of a drying fluid therein, and the exhaust path of the drying fluid passes the drying fluid from the drying room into the cleaning room" the examiner respectfully disagrees. '696 teaches a shutter (or separation plate) (50) with an exhaust path (56) located between a semiconductor cleaning chamber (3) and drying chamber (140) (Fig. 4, col. 6 lines 45-67).

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 8-13 and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamikawa et al. (US Patent 6,068,002 known hereafter as '002), Kamikawa et al. (US Patent 6,299,696 known hereafter as '696) and Kamikawa et al. (US PG Pub 2003/0159718 known hereafter as '718).

#### Claim 8

'002 teaches an apparatus for cleaning semiconductor substrates (col. 7 lines 66-67, col. 8 lines 1-2) comprising: a chamber having a cleaning room (30) in which the semiconductor substrates are cleaned and a drying room (23) disposed over the cleaning room, in which the semiconductor substrates are dried (Fig. 4); a supporter disposed in the chamber that supports the semiconductor substrates (24) (col. 9 lines 10-19); a supply pipe installed in the drying room that supplies a drying fluid onto the substrate (col. 9 lines 66-67, col. 10 lines 1-17, item 40); a separation plate (36) which is

movable to separate the cleaning room and the drying room or the place the cleaning room and the drying room in communication with one another (col. 11 lines 64-67, col. 12 lines 1-12).

It does not teach the drying fluid supply pipe is installed in the upper portion of the drying room, an exhaust path of the drying fluid formed in the separation plate where the drying fluid passes the drying room to the cleaning room.

'718 teaches the drying fluid supply pipe at the upper portion of the drying room (p. 7 paragraph 0126). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to move the drying fluid supply pipe from the lower portion of the drying room to the upper portion of the drying room, since it has been held that rearranging parts of an invention involves only routine skill in the art *In re Japikse*, 86 USPQ 70.

'696 teaches a shutter (or separation plate) (50) with an exhaust path (56) located between a semiconductor cleaning chamber (3) and drying chamber (140) (Fig. 4, col. 6 lines 45-67). At the time of the invention to one of ordinary skill in the art would have known that a separation plate with an exhaust path in it would allow exhaust to escape from the drying chamber into the cleaning chamber. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the separation plate taught by '696 in the apparatus taught by '002 with the drying fluid

supply pipe at the upper portion of the drying chamber as taught by '718. The apparatus taught by '696, '002 and '718 is capable of draining the cleaning room of cleaning solution as the drying room is decompressed and the drying fluid supplied to drying room flows from the drying room to the cleaning room through the exhaust path of the separation plate.

Claim 9

'002, '718 and '696 teach the apparatus as taught in Claim 8, and additionally '002 teaches the supply pipe comprises: a first supply pipe for supplying alcohol vapor into the drying room; and a second supply pipe for supplying a heated dry gas into the drying room (col. 10, lines 1-17).

Claim 10

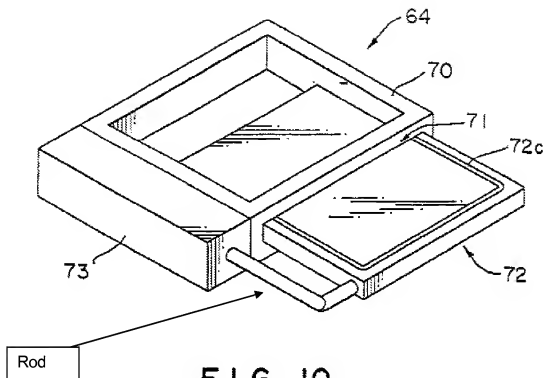
'002, '718 and '696 teach the apparatus as taught in Claim 9 and additionally '002 teaches a cleaning solution supply pipe disposed in the cleaning room that injects the cleaning solution into the cleaning room where the cleaning room further comprises: an inner bath (22a) where the supporter is disposed; and an outer bath (22b) disposed to surround the upper outer periphery of the inner bath wherein the cleaning solution overflowing from the inner bath to the outer bath and a drain port is formed at the bottom of the outer bath (col. 9 lines 20-37).

Claim 11

'002, '718 and '696 teach the apparatus as taught in Claim 10 and additionally '002 teaches an exhaust port formed at one side of the outer bath (Fig. 4 item 29, col. 9 lines 34-37). The functional recitation "the drying fluid flowing into the cleaning room along the exhaust path of the separation plate (36) is exhausted to the outside through the exhaust port (29)" has not been given patentable weight because it is intended use. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

#### Claim 12

'002, '718 and '696 teach the apparatus as taught in Claim 10 and additionally '718 teaches the separation plate having a connecting rod connected to the separation plate and to a driving part for horizontally moving the connecting rod (p. 6 paragraph 122, Fig. 10, See Fig. below). The claim would have been obvious because a particular known technique was recognized as part of the ordinary capabilities of one skilled in the art. One it would have been obvious to one of ordinary skill in the art at the time of the invention to have a rod connecting the separation plate and driving part for horizontally moving the connecting rod with the apparatus as taught in '002, '718 and '696 while performing the same function as taught in its respective reference.



Claim 13

'002, '718 and '696 teach the apparatus as taught in Claim 8 wherein the exhaust path comprises at least one hole or slit formed in the separation plate ('696 Fig. 4).

Claim 17

'002, '718 and '696 teach the apparatus as taught in Claim 13, and additionally '002 teaches the semiconductor substrates placed in a row and the row direction is vertical to the processing surfaces of the semiconductor substrates (Fig. 5 item 24, col. 8 lines 46-62).



Claim 18-22

See Claim 8.

Claim 23

See Claim 12

Claim 24

See Claim 9

Claim 25

See Claim 10

Claim 26

See Claim 11

5. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over '002, '718 and '696 as applied to claim 13 above, and further in view of Kikuchi et al. (US Patent 5226056 known hereafter as '056).

#### Claim 14

'002, '718 and '696 teach the apparatus as taught in Claim 13, but does not teach a plurality of holes nor that the sizes of the holes or slits differ according to their positions. '056 teaches a shower plate with a large hole in the center and smaller holes elsewhere on the plate (col. 10 lines 52-60) used to provide a uniformity of treatment (col. 7 lines 15-18). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the exhaust path of the shower plate taught by '056 with the apparatus taught by '002, '718 and '696 in order to uniformly dry the wafers.

#### Claim 15

'002, '718 and '696 teach the apparatus as taught in Claim 13, but does not teach multiple holes or slits formed in a row at the central portion of the separation plate. '056 teaches multiple holes or slits in the separation plate as discussed in Claim 14. Additionally '056 teaches where the multiple holes or slits are in at least one row at the central portion of the separation plate (Fig. 19, items 64 and 65).

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over '002, '718, '696 and '056 as applied to claim 15 above, and further in view of Dexter et al. (US Patent 5,524,361 known hereafter as '361).

Claim 16

'002, '718, '696 and '056 teaches the apparatus according to Claim 15, but does not teach that the spacing between holes differs according to the forming position. '361 teaches that varying the location and quantity of holes results in uniform air distribution and drying of wafers (col. 5 lines 42-53, col. 6 lines 29-48, Fig. 5 items 40, 40', 40"). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the known technique of varying the location and quantity of holes in a plate in order to result in uniform air distribution and drying of a product within an apparatus as taught by '361 within the apparatus taught by '002, '718, '696 and '056.

***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joy Watson whose telephone number is 571-270-1267. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number:  
10/827,512  
Art Unit: 1792

Page 12

/Michael Cleveland/  
Supervisory Patent Examiner, Art Unit 1792